

Table 6.1 – Electric Net Summer Capability (All Sectors)

(Gigawatts)

	<u>1980</u>	<u>1990</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2010</u>	<u>2020</u>	<u>2025</u>
Coal ¹	NA	307.4	315.1	314.2	315.4	315.4	313.8	343.8	398.4
Petroleum/Natural Gas ²	NA	220.4	283.8	320.7	374.2	421.3	448.5	510.6	547.2
Total Fossil Energy	444.1	527.8	598.9	634.9	689.5	736.7	762.3	854.4	945.6
Nuclear	51.8	99.6	97.9	98.2	98.7	98.8	100.6	102.7	102.7
Hydroelectric Pumped Storage ³	NA	19.5	19.5	19.1	20.4	20.4	20.9	20.9	20.9
Conventional Hydroelectric	81.7	73.9	79.4	79.5	79.4	79.4	79.2	79.2	79.2
Geothermal	0.9	2.7	2.8	2.2	2.3	2.3	2.2	3.4	4.6
Wood ⁴	0.1	5.5	6.1	5.9	5.8	5.9	7.0	8.9	11.3
Waste ⁵	NA	2.5	3.9	3.8	3.8	3.9	3.8	3.9	3.9
Solar Thermal and Photovoltaic	NA	0.3	0.4	0.4	0.4	0.4	1.0	1.6	2.7
Wind	NA	1.8	2.4	3.9	4.4	4.9	8.9	10.4	11.3
Total Renewable Energy	82.7	86.8	94.9	95.7	96.1	96.7	102.1	107.6	113.0
Other ⁶	NA	0.5	0.5	0.4	0.6	0.6	0.7	0.7	0.7
Total Electric Capability	578.6	734.1	811.7	848.3	905.3	953.2	986.6	1086.2	1182.8

Sources: EIA, *Annual Energy Outlook 2005* DOE/EIA-0383 (2005) (Washington, D.C., February 2005), Tables A9, A16; EIA, *Annual Energy Review 2003*, DOE/EIA-0384(2003) (Washington, D.C., September 2004), Table 8.11a.

Notes:

Data include electricity-only and combined-heat-and-power (CHP) plants whose primary business is to sell electricity, or electricity and heat, to the public. Through 1988, data are for net summer capacity at electric utilities only. Beginning in 1989, data also include net summer capacity at independent power producers and the commercial and industrial (end-use) sectors.

¹ Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and synthetic coal.

² Petroleum, natural gas, distillate fuel oil, residual fuel oil, petroleum coke, jet fuel, kerosene, other petroleum, waste oil, supplemental gaseous fuels, blast furnace gas, propane gas, and other manufactured and waste gases derived from fossil fuels. Includes natural gas fired distributed generation.

³ Pumped storage included in Conventional Hydro prior to 1989.

⁴ Wood, black liquor, and other wood waste. Includes projections for energy crops after 2010. Includes other biomass in projections.

⁵ Municipal solid waste, landfill gas, sludge waste, tires, agricultural byproducts, and other biomass. Waste included in Wood prior to 1985.

⁶ Includes batteries, chemicals, hydrogen, pitch, sulfur, purchased steam, fuel cells, and miscellaneous technologies.

NA = Not Available

Table 6.2 – Electricity-Only Plant Net Summer Capability

(Gigawatts)

	<u>1980</u>	<u>1990</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2010</u>	<u>2020</u>	<u>2025</u>
Coal ²	NA	299.9	305.2	305.2	305.8	305.5	304.6	334.6	389.2
Petroleum/Natural Gas ³	NA	198.7	243.9	279.4	324.6	370.3	388.8	447.8	484.4
Total Fossil Energy	NA	498.6	549.0	584.5	630.4	675.8	693.4	782.5	873.6
Nuclear	NA	99.6	97.9	98.2	98.7	98.8	100.6	102.7	102.7
Hydroelectric Pumped Storage ⁴	NA	19.5	19.5	19.1	20.4	20.4	20.9	20.9	20.9
Conventional Hydroelectric	NA	73.3	78.2	78.4	78.3	78.3	78.2	78.2	78.2
Geothermal	NA	2.7	2.8	2.2	2.3	2.3	2.2	3.4	4.6
Wood ⁵	NA	1.0	1.5	1.5	1.4	1.4	1.8	2.8	4.5
Waste ⁶	NA	1.9	2.8	3.0	2.9	3.0	3.6	3.7	3.7
Solar Thermal and Photovoltaic	NA	0.3	0.4	0.4	0.4	0.4	0.6	0.8	0.9
Wind	NA	1.8	2.4	3.6	4.4	4.9	8.9	10.4	11.3
Total Renewable Energy	NA	80.9	88.1	89.1	89.7	90.2	95.3	99.3	103.1
Other	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Electric Capability ⁷	NA	698.6	754.5	790.8	839.2	885.2	910.1	1005.3	1100.2

Sources: EIA, *Annual Energy Outlook 2005* DOE/EIA-0383 (2005) (Washington, D.C., February 2005), Tables A9, A16; EIA, *Annual Energy Review 2003*, DOE/EIA-0384(2003) (Washington, D.C., September 2004), Table 8.11c.

Notes:

Data are for electricity-only plants in the electric power sector whose primary business is to sell electricity to the public. Through 1988, data are for net summer capacity at electric utilities only. Beginning in 1989, data also include net summer capacity at independent power producers.

¹ Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and synthetic coal.

² Petroleum, natural gas, distillate fuel oil, residual fuel oil, petroleum coke, jet fuel, kerosene, other petroleum, waste oil, supplemental gaseous fuels, blast furnace gas, propane gas, and other manufactured and waste gases derived from fossil fuels. Includes natural gas fired distributed generation.

³ Pumped storage included in Conventional Hydro prior to 1989.

⁴ Wood, black liquor, and other wood waste. Includes projections for energy crops after 2010. Includes other biomass in projections.

⁵ Municipal solid waste, landfill gas, sludge waste, tires, agricultural byproducts, and other biomass. Waste included in Wood prior to 1985.

⁶ Includes batteries, chemicals, hydrogen, pitch, sulfur, purchased steam, fuel cells, and miscellaneous technologies.

NA = Not Available

Table 6.3 – Combined-Heat-and-Power Plant Net Summer Capability

(Gigawatts)

	<u>1980</u>	<u>1990</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2010</u>	<u>2020</u>	<u>2025</u>
Coal ²	NA	2.4	5.0	4.6	5.2	5.7	5.1	5.0	5.0
Petroleum/Natural Gas ³	NA	8.3	21.9	22.5	30.8	31.5	39.7	39.7	39.7
Total Fossil Energy	NA	10.7	26.9	27.1	36.1	37.2	44.8	44.7	44.7
Nuclear	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hydroelectric Pumped Storage	NA	NA	NA	NA	NA	NA	NA	NA	NA
Conventional Hydroelectric	NA	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00
Geothermal	NA	0.0	0.0	0.0	0.0	0.0	0.00	0.00	0.00
Wood ⁴	NA	0.2	0.2	0.1	0.1	0.2	0.00	0.00	0.00
Waste ⁵	NA	0.2	0.5	0.4	0.4	0.4	0.00	0.00	0.00
Solar Thermal and Photovoltaic	NA	NA	NA	NA	NA	NA	0.00	0.00	0.00
Wind	NA	0.0	0.0	0.3	0.0	0.0	NA	NA	NA
Total Renewable Energy	NA	0.5	0.7	0.8	0.6	0.6	0.3	0.3	0.3
Other	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Electric Capability ⁶	NA	11.2	27.7	27.9	36.6	37.8	45.1	45.0	45.0

Sources: EIA, *Annual Energy Outlook 2005* DOE/EIA-0383 (2005) (Washington, D.C., February 2005), Tables A9, A16; EIA, *Annual Energy Review 2003*, DOE/EIA-0384(2003) (Washington, D.C., September 2004), Table 8.11c.

Notes:

Includes combined-heat-and-power (CHP) plants whose primary business is to sell electricity and heat to the public. For 1989-2001, does not include electric utility CHP plants—these are included in "Electricity-Only Plant Capability " in Table 6.2. Also includes commercial and industrial CHP and a small number of commercial electricity-only plants.

¹ Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and synthetic coal.

² Petroleum, natural gas, distillate fuel oil, residual fuel oil, petroleum coke, jet fuel, kerosene, other petroleum, waste oil, supplemental gaseous fuels, blast furnace gas, propane gas, and other manufactured and waste gases derived from fossil fuels. Includes natural gas fired distributed generation.

³ Pumped storage included in Conventional Hydro prior to 1989.

⁴ Wood, black liquor, and other wood waste. Includes projections for energy crops after 2010. Includes other biomass in projections.

⁵ Municipal solid waste, landfill gas, sludge waste, tires, agricultural byproducts, and other biomass. Waste included in Wood prior to 1985.

⁶ Includes batteries, chemicals, hydrogen, pitch, sulfur, purchased steam, fuel cells, and miscellaneous technologies.

NA = Not Available

Table 6.4 – Regional Noncoincident ¹ Peak Loads

(Megawatts, except as noted)

North American Electric Reliability Council Regions	<u>1990</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>1990</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>
	Summer Peak					Winter Peak				
ECAR	79,258	92,033	100,235	102,996	100,714	67,097	84,546	85,485	87,300	86,120
ERCOT	42,737	57,606	55,201	56,248	57,639	35,815	44,641	44,015	45,414	46,538
FRCC	NA	37,194	39,062	40,696	41,618	NA	38,606	40,922	45,635	44,266
MAAC	42,613	49,477	54,015	55,569	56,257	36,551	43,256	39,458	46,551	44,748
MAIN	40,740	52,552	56,344	56,396	57,169	32,461	41,943	40,529	42,412	42,332
MAPP (U.S.)	24,994	28,605	28,321	29,119	29,957	21,113	24,536	21,815	23,645	24,148
NPCC (U.S.)	44,116	50,057	55,949	56,012	56,550	40,545	43,852	42,670	46,009	46,903
SERC	121,943	156,088	149,293	158,767	157,864	117,448	139,146	135,182	141,882	138,291
SPP	52,541	40,199	40,273	39,688	40,564	38,949	30,576	29,614	30,187	29,891
WECC ² (U.S.)	97,389	114,602	109,119	119,074	119,320	94,252	97,324	96,622	95,951	105,492
Contiguous U.S.	546,331	678,413	687,812	714,565	717,652	484,231	588,426	576,312	604,986	608,729
ASCC (Alaska)	463	NF	NF	NF	NF	613	NF	NF	NF	NF
Hawaii	NF	NF	NF	NF	NF	NF	NF	NF	NF	NF
U.S. Total	546,794	678,413	687,812	714,565	717,652	484,844	588,426	576,312	604,986	608,729
Capacity Margin (%) ³	21.6	15.7	14.5	16.4	19.8	NA	29.5	28.9	29.4	32.8

Source: EIA, *Annual Energy Review 2003*, DOE/EIA-0384(2003) (Washington, D.C., September 2004), Table 8.12.

Notes:

NF = data not filed

NA = Not Applicable

2003 data are forecast estimates.

¹ Noncoincident peak load is the sum of two or more peak loads on individual systems that do not occur at the same time interval.

² Renamed from WSCC in 2002

³ The percent by which planned generating capacity resources are expected to be greater (or less) than estimated net internal demand at the time of expected peak summer (or winter) demand. Net internal demand does not include estimated demand for direct control load management and customers with interruptible service agreements.

Table 6.5 – Electric Generator Cumulative Additions and Retirements(Gigawatts) ¹

	<u>2010</u>	<u>2020</u>	<u>2025</u>
Cumulative Planned Additions			
Coal Steam	1.8	1.8	1.8
Other Fossil Steam ²	0.0	0.0	0.0
Combined Cycle	28.3	28.3	28.3
Combustion Turbine/Diesel	3.9	3.9	3.9
Nuclear	0.0	0.0	0.0
Pumped Storage	0.0	0.0	0.0
Fuel Cells	0.0	0.0	0.0
Renewable Sources ³	2.7	2.9	3.0
Distributed Generation ⁴	0.0	0.0	0.0
Total Planned Additions	36.7	36.9	37.0
Cumulative Unplanned Additions			
Coal Steam	0.0	30.6	85.1
Other Fossil Steam ²	0.0	0.0	0.0
Combined Cycle	3.5	44.2	56.8
Combustion Turbine/Diesel	5.9	47.4	69.9
Nuclear	0.0	0.0	0.0
Pumped Storage	0.0	0.0	0.0
Fuel Cells	0.0	0.0	0.0
Renewable Sources ³	0.2	4.0	7.7
Distributed Generation ⁴	0.4	3.1	6.9
Total Unplanned Additions	9.9	129.1	226.4
Cumulative Retirements			
Coal Steam	2.4	3.0	3.0
Other Fossil Steam ²	9.3	28.6	29.2
Combined Cycle	0.1	0.4	0.4
Combustion Turbine/Diesel	1.9	8.1	9.9
Nuclear	0.0	0.0	0.0
Pumped Storage	0.0	0.0	0.0
Fuel Cells	0.0	0.0	0.0
Renewable Sources ³	0.1	0.1	0.1
Total Retirements	13.8	40.1	42.6

Sources: EIA, *Annual Energy Outlook 2005*, DOE/EIA-0383 (2005)
(Washington, D.C., February 2005), Table A9.

Notes:

¹ Additions and retirements since December 31, 2001.

² Includes oil-, gas-, and dual-fired capability.

³ Includes conventional hydroelectric, geothermal, wood, wood waste, municipal solid waste, landfill gas, other biomass, solar, and wind power.

⁴ Primarily peak load capacity fueled by natural gas.

Table 6.6 – Transmission and Distribution Circuit Miles(Miles) ¹

Voltage (kilovolts)	<u>1980</u>	<u>1990</u>	<u>1999</u>	<u>2000</u> ²	<u>2001</u> ²	<u>2002</u> ²	<u>2003</u> ²
230	NA	70,511	76,762	76,437	80,515	81,252	82,238
345	NA	47,948	49,250	51,025	53,855	54,827	54,195
500	NA	23,958	26,038	25,000	27,343	27,587	27,407
765	NA	2,428	2,453	2,426	2,518	2,560	2,560
Total	NA	144,845	154,503	154,888	164,231	166,226	166,400

Sources: EIA, *Electricity Transmission Fact Sheets*, http://www.eia.doe.gov/cneaf/electricity/page/fact_sheets/transmission.html; NERC, *Electricity Supply and Demand Database*, 2003, <http://www.nerc.com/~esd/Brochure.pdf>

Notes:

¹ Circuit miles of AC lines 230 kV and above.

² Data includes both existing and planned transmission lines